



Oceanic Convective Nowcasting Demonstration (OCND)

Weather Accident Prevention Annual Project Review
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OCND Program



- ◆ Purpose
 - Demonstrate end-to-end weather hazard and product dissemination system for remote/oceanic areas. Users include airline dispatch, air traffic control, and the airborne flight crew.
 - Develop operationally useful weather products, including the automated process to create them, for remote/oceanic areas. Products might include convection, turbulence, in-flight icing, and satellite-based winds
- ◆ Participants include NCAR (lead), United Airlines, Aviation Weather Center, Naval Research Laboratory, Oakland Oceanic ARTCC, ARINC



OCND Program



- ◆ Schedule--Phase I
 - Project start—1 Feb 99
 - Algorithm and display development—Feb 99-current
 - User and meteorologist training—Nov 99
 - Phase I demonstration—Nov 99-Jul 00
- ◆ Phase II will add/refine weather products and features based on user feedback, and expand geographic application
 - Phase II—Jul 00-Jul 02



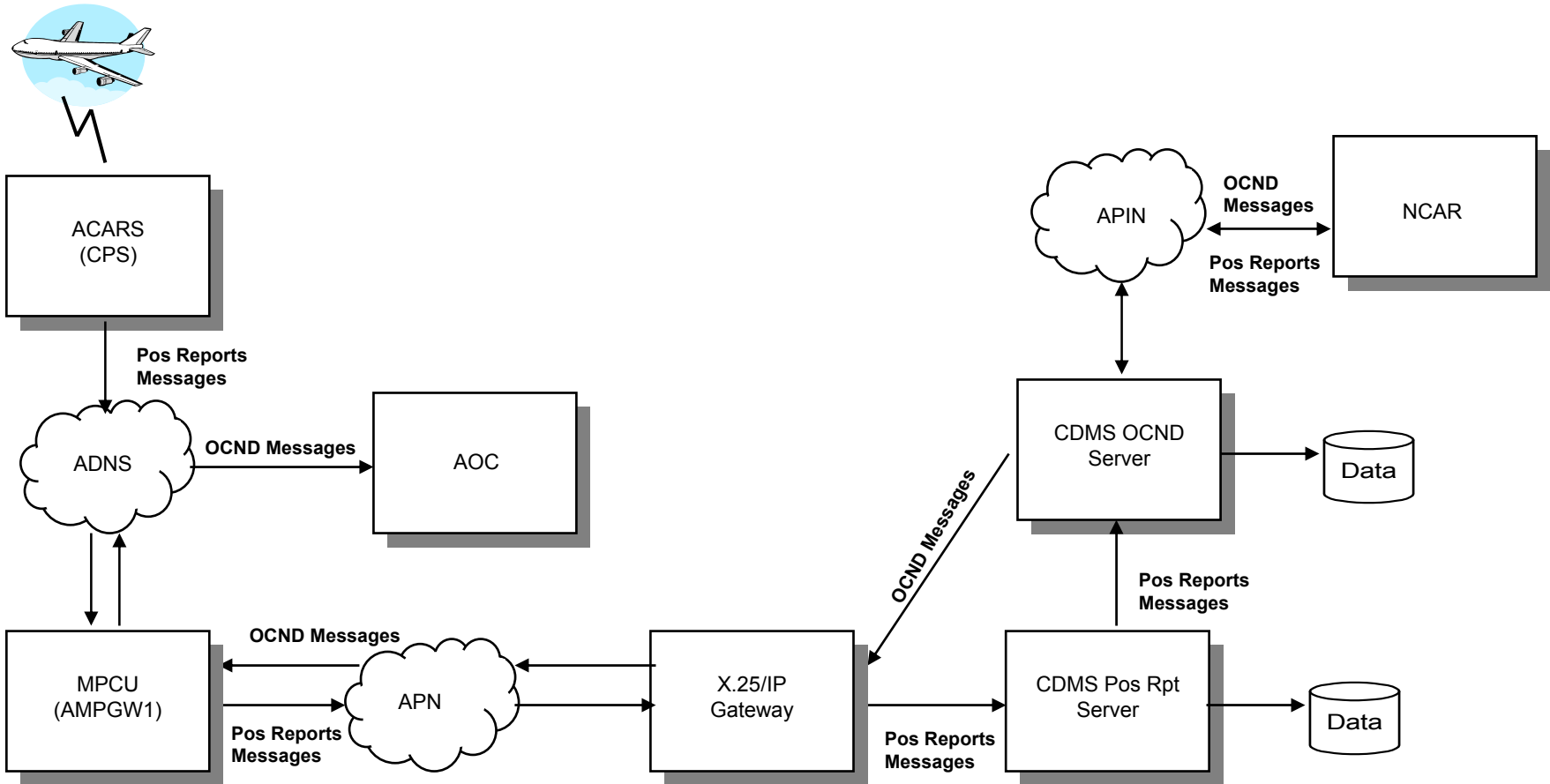
OCND Program



- ◆ Phase I demonstration content--flights to/from CONUS and New Zealand/Australia
 - Automated product creation (convective hazards initially) at NCAR
 - Transmission to and display at United dispatch and Oakland Center
 - Data link to the aircraft via ARINC
 - Evaluation and feedback



OCND ARCHITECTURE



OCND Progress



◆ Progress

- Coordinated and published an OCND Plan
- Held a scientific and user needs workshop
- Established an OCND web site for team information and product dissemination
- Established ARINC communication link for flight track and product transmission
- Completed United training plan and materials, and evaluation plan
- Completed algorithm development and coding (incremental enhancements continue)
- Completed ground user display development (ARTCC, United Dispatch, AWC)
- Completed software to create cockpit printout
- Installed dedicated OCND workstations and ISP at Oakland Center



OCND Status



- ◆ System development
 - Complete for Phase I, running real-time on http://www.rap.ucar.edu/projects/ocnd/realtime_sys/
- ◆ Communications to aircraft
 - Testing end-to-end through United Airlines Dispatch to ARINC, to ACARS printer
 - Resolving network security issues within ARINC that will permit us to send data to airborne aircraft
- ◆ Product dissemination to ground users
 - United Airlines Meteorology and Dispatch have access to OCND products and are using them
 - Workstations are in-place at Oakland Center. CWSU is using OCND products and providing feedback.

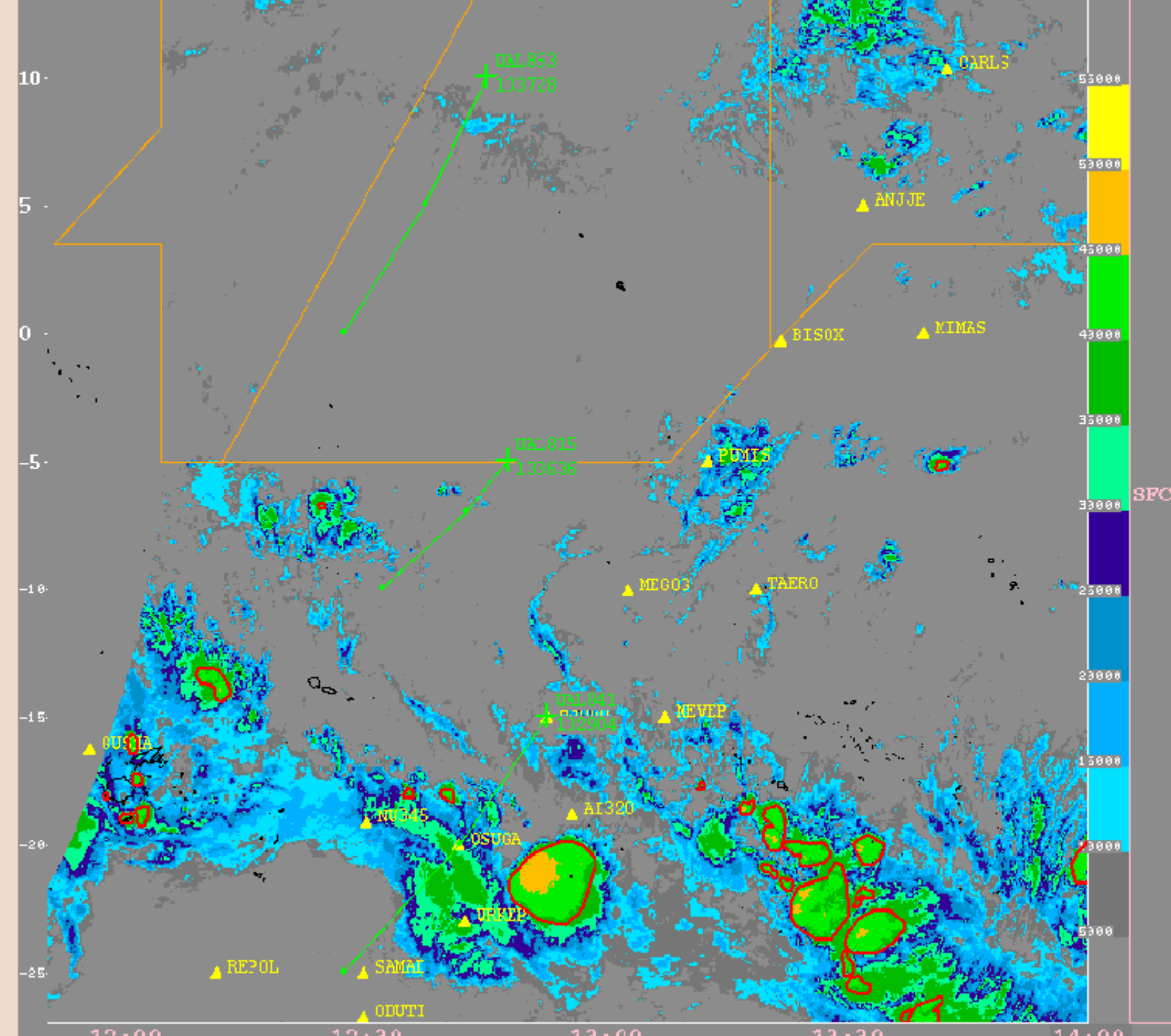


OCND Plans



- ◆ Plans for FY00
 - Complete end-to-end product development and dissemination test
 - Initial operational capability, demonstration, evaluation
 - Document evaluation results for Phase I and plan for Phase II—Mar-Jul 00
 - Implement links to supporting NRL products
 - Evaluate methods to correct for non-standard temperature lapse rate
 - Collaborate with NRL to develop other products
 - Plan for geographic expansion of capability



[Full Zoom](#)[Zoom 1](#)[Zoom 2](#)[Zoom 3](#)[Zoom 4](#)[NRL Products](#)[Feedback](#)

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Satellite Digital Audio Radio (SDARS)



- ◆ Provide convective weather hazard graphical weather hazard products to support the American Airlines Phase II SDARS demonstrations
 - Acquire required satellite channels and available data sources to correlate with the geographic routings of the demonstration aircraft.
 - Develop integrated algorithms that automate the product generation process given the available raw data. Test and implement these algorithms to supply near real-time hazard graphics to the SDARS dissemination system.
 - Support as necessary system development, including product formatting; data transmission; server development and testing; product generation; product display to end-users; and system monitoring.
- ◆ Initiate development of turbulence and in-flight icing products to support future phases of the SDARS demonstrations



Future—Gulf of Mexico



- ◆ Initial focus on the Gulf of Mexico, supporting
 - Helicopter operations
 - Airline services
 - Houston Air Route Traffic Control
- ◆ GOMEX is a Houston Center and FAA initiative that includes collaborative weather information dissemination to all the stakeholders—ATC, flight operations (including data link to the cockpit), and dispatch functions
- ◆ Fast track to support requirements definition process at FAA HQ—meetings held every 6 weeks
- ◆ Early success may be an OCND-type capability in the near term, using satellite, lightning, and available radar data
- ◆ Future expansion could include Central and South America



Summary



- ◆ OCND is operational, *except* for data link to the cockpit
- ◆ Enhancements are being incorporated based on user feedback (ATC, United dispatch, United flight operations, scientific verification)
- ◆ Pursuing demand for global expansion of capability

